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interested himself in the details of this work from the start, and conducted researches on the best methods of measurement of the plates, and the derivation from the measures of the accurate positions of the stars. He also concerned himself with the reproduction of the chart plates, and inaugurated the publication on paper of enlarged copies of the original negatives. In his later years the two pieces of work to which he devoted greatest attention were the photographic atlas of the Moon, and the organisation and execution of the observations of Eros for the determination of the solar parallax. The photographs of the Moon, taken in collaboration with M. Puiseux, are of the greatest beauty and value. The coudé telescope being of long focus, gave an image of the Moon on a large scale, and this was subsequently further enlarged. An immense amount of care and labour was required to obtain photographs with such fine definition, not above one plate in ten, though taken in apparently good atmospheric conditions, being considered by the critical authors as sufficiently good for publication. This atlas gives a permanent record of the minutest details of the Moon at the present epoch; and should any changes occur, they will be detected by comparison of photographs taken in the future with those contained in the atlas of Loewy and Puiseux.

The Eros campaign, which was decided upon by the Astrographic Conference which met at Paris in 1900, brought a large amount of work, which he did not in the least shirk, upon M. Loewy. He undertook and carried out the preparation of ephemerides, the selection of reference stars, and the collection and publication of the results obtained at the different observatories. At the same time he obtained results of the highest degree of accuracy from the photographs taken at the observatory which he directed. He made extensive investigations of the precision which could be obtained by repeating the measures under different conditions; and if he erred at all, it was in having the plates measured with more care rather than with less than they required.

M. Loewy was a corresponding member of the Academies of St Petersburg, Vienna, Berlin, Rome, and Washington. He received the Gold Medal of the Royal Astronomical Society in 1889 for his invention of the equatorial coudé and his method of determining the constant of aberration. The conferences at Paris brought him in contact with astronomers from all countries. All who met him were impressed by his kindly disposition and his zeal for his work.

M. Loewy died suddenly on October 15 while speaking at a meeting of the Council of the French Observatories. He leaves a widow, two sons and four daughters. He was elected an Associate of the Society 1886 November 12. F. W. D.

M. Charles Trépied, Director of the Algiers Observatory, died suddenly on 1907 June 10, a few days after his return from the *Conférence Internationale des Études Solaires* held at Meudon in May last. On eclipse expeditions, at the successive meetings of

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the international conferences for the execution of the Astrographic Chart and Catalogue, and at the recent Meudon conference, he had made many friends among English astronomers, who would wish to join in the tribute paid by the late Monsieur Loewy to the high qualities of heart and mind which gained him "les sympathies de tous ceux qui avaient eu l'occasion de l'approcher, la chaude amitié de tous ceux qui avaient eu le privilége de vivre dans son intimité."

Born in 1844, M. Trépied was associated early in his scientific career with the *Bureau des Longitudes* and its observatory at Montsouris, and he was nominated a member of the Bureau in 1877. About this time the French Government was actively engaged in the organisation and equipment of the six *Observatoires astronomiques de province*, and in 1880 they confided to M. Trépied the directorship of the Algiers Observatory, with the task of re-creating it upon a new site. The annual reports to the Ministry of Public Instruction from 1880 to 1896 give a very interesting account of the enterprise. Starting with inadequate instruments and a small budget which allowed only one assistant, M. Trépied devoted himself at first to the observation of the places of the Moon and of moon-culminating stars, and to solar spectroscopy. In 1882 he travelled to Egypt to observe at Sohag the total eclipse of short duration in which "les astronomes anglais, italiens, et français avaient resolus de partager fraternellement les opérations."

In 1885 the Algiers Observatory was transferred to Bouzaréah on a height overlooking the city, and in the course of a few years it was equipped with a new meridian circle, equatorial coudé, and astrographic telescope. The volumes of the *Comptes Rendus* bear continual testimony to the activity of the observatory on many sides: its most conspicuous enterprises include a zone of the Southern A.G. Catalogue, a zone of the Astrographic Chart and Catalogue, and a very considerable share in the photographic observations of Eros.

In 1900, when the line of totality passed over his observatory, and again in 1905, when it passed over Guelma, M. Trépied earned the gratitude of several British eclipse observers by his whole-hearted devotion to their help. And the same kindly qualities which were so conspicuous on these occasions made him the man upon whom was naturally thrust the burden of acting as Secretary to every meeting of the Astrographic Conference; to the Conference of Directors of National Ephemerides which met at Paris in 1896; to the Meudon Conference of 1907; and to many others. In this position he was able on many occasions to exercise his power of polite but acute criticism. "La regle est précise; cependant il est aisé de voir que la précision est toute dans les termes, non dans le fond," was his verdict upon the resolution which bound the observatories to get fourteenth magnitude stars upon their charts at a date when there was even less possibility of defining exactly the fourteenth photographic magnitude than there is now.

A like elegance distinguished his mathematical investigations

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in geodesy, where he extended Legendre's theorems on the treatment of large spherical triangles; in celestial dynamics; and especially in the theory of precise celestial photography, to which he contributed formulæ of great generality, and at the same time great convenience.

The untimely death of M. Trépied is one of the heaviest of the great misfortunes which have robbed France within the last few years of nearly all the men who bore so distinguished a part in the inception and development of the great enterprises in which French astronomy has been involved.

He was elected an Associate of the Society 1901 November 8.

A. R. H.

Hermann Carl Vogel, the announcement of whose death on August 13, 1907, was everywhere received with profound regret, will always occupy a high place in the history of astronomy as one of the pioneers in the new fields of inquiry opened up by the application of the spectroscope to the study of the heavenly bodies. He was born at Leipzig on April 3, 1841, and, while yet a student at the university, was appointed as assistant at the observatory in that city in 1865. During the preceding three years a great impetus was given to spectroscopic astronomy by the striking results which had been obtained by Rutherfurd in America, Secchi in Italy, and Huggins in England, and there can be little doubt that at this time Vogel was especially attracted by the great possibilities which the work of these observers suggested. He was probably still further influenced at a little later stage by the discovery of the method of observing solar prominences without an eclipse which was made by Lockyer and Janssen in 1868, and by the first researches of Huggins on the movements of stars in the line-of-sight. At all events, after taking his degree in 1867, we find him to have been actively engaged with Zöllner in 1869 in the observation of solar prominences, and from this time to his death his energies were chiefly directed along astrophysical lines of research.

The record of Vogel's work at the private observatory founded by von Bülow at Bothkamp, of which he was in charge from 1870 to 1874, is the best possible testimony to his great skill and industry in the earlier part of his career. From the well-known publications of the observatory during this period we see that his outlook was already a wide one; the spectra of the Aurora, the Zodiacal Light, and lightning received his careful attention, no less than those of the Sun, stars, star clusters, nebulæ, comets, and planets. For these observations he employed a spectroscope which he had specially designed to secure the stability which is essential to useful work on the motions of the stars, and for the determination of wave-lengths with reasonable accuracy. The results of some of these observations have naturally been superseded by others which have since been made with more powerful instruments, but they were of the highest order for the period, and Vogel was himself always among the first to devise and employ improved methods of observation.